Type specimens of recent and fossil Testudines and Crocodylia in the collections of the Netherlands Centre for Biodiversity Naturalis, Leiden, the Netherlands

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Hoogmoed, M.S., M.E. Gassó Miracle & L.W. van den Hoek Ostende. Type specimens of recent and fossil Testudines and Crocodylia in the collections of the Netherlands Centre for Biodiversity Naturalis, Leiden, the Netherlands.
Zool. Med. Leiden 84 (8), 15.x.2010: 159-199, figs 1-13.— ISSN 0024-0672.
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Key words: Testudines; Crocodylia; types; Leiden Museum.
We report a total of 57 type specimens (31 primary and 26 secondary) belonging to 27 nominal species of chelonians (23) and crocodilians (4) in the collection of the Netherlands Centre for Biodiversity Naturalis Leiden, the Netherlands. Fragments of fossil crocodilians have not been included in the specimen count. We provide the original name and publication, type locality, synonyms under which type specimens have been cited in the literature, current name, comments on the type material, its history, and its status and provide information on illustrations.

Introduction

The Rijksmuseum van Natuurlijke Historie (RMNH), presently Netherlands Centre for Biodiversity Naturalis, was founded August 9th, 1820 by King Willem I of The Netherlands. At that time three existing collections were joined: 's Landskabinet van Natuurlijke Historie (established in 1808 as Cabinet du Roi and renamed in 1810), the 'Ancien Cabinet' containing material from Leiden University (of which the collection of the Stadtholder formed part), and the private collection of the first director of the RMNH, C.J. Temminck (Gijzen, 1938; Holthuis, 1995; Fransen et al., 1997). The origin of this material was rather diverse and sometimes difficult to track, but some of the material dated back to at least 1750. However, of the chelonians and crocodilians treated here, only one dry tortoise shell formed part of the collections present in 1820. The rest was collected after the establishment of the RMNH. Just after founding the RMNH, at the instigation of C.J. Temminck a multidisciplinary commission ('Natuurkundige Commissie') for the scientific exploration of the then Dutch East Indies (now Indonesia) was established, and the first members (H. Kuhl and J.C. van Hasselt accompanied by the artist J. Keultjes and the technician G. van Raalten) travelled to Java in 1820 where they arrived in 1821 (Holthuis, 1995), and immediately started their work of collecting and describing natural products. This commission functioned till 1850, when it was dissolved and for a number of years thereafter, its work was continued by several travelers that continued to provide the RMNH with material. The members of this commission provided the RMNH with an enormous amount of material (preserved specimens,

drawings of live specimens and field notes), of which many specimens served for the description of new species. Members of the commission that were responsible for the collection of chelonian and crocodilian type specimens (besides many other herpetological specimens) are H. Kuhl & J.C. van Hasselt (on museum labels generally indicated as 'K & vH'), H. Boie & H.C. Macklot, S. Müller, C.A.L.M. Schwaner, L. Horner, E. A. Forsten and P. Diard. Besides the three basal collections present in 1820, this material from the Dutch East Indies collected in the first years of the existence of the RMNH, formed the backbone of the RMNH collections and still is a rich source of new knowledge.

Apart from this concentrated effort in the Dutch East Indies, C.J. Temminck (director of the RMNH from 1820 until 1858) and his successor H. Schlegel (director from 1858 until 1884) maintained close contacts with Dutch diplomats and civil servants in many Dutch outposts in all corners of the world. Thus important material was also obtained *e.g.* from southern Africa by the members of the 'Natuurkundige Commissie' H. Kuhl and J.C. van Hasselt during a stopover on their way to the East Indies and by J.B. von Horstock, from Ghana through H.S. Pel, from Japan through P.F. von Siebold and H. Bürger, from Suriname through H.H. Dieperink (though no type material here discussed), from the U.S.A. through G. Troost, and from the Dutch East Indies through C.F.H. ten Kate.

Salomon Müller was one of the two members of the 'Natuurkundige Commissie' that returned to the Netherlands and was able to publish part of the scientific results of his stay in the Dutch East Indies, either by himself (Müller, 1838), or together with Schlegel (Müller & Schlegel, 1839; 1841; Schlegel & Müller, 1840, 1845). From Müller's publications (and other documents about the work of the 'Natuurkundige Commissie') it becomes clear what pioneering work was done by the members of the 'Natuurkundige Commissie', most of which unfortunately could not publish their results (of the 18 persons sent out as members of this commission most died in the East Indies and only two returned to the Netherlands) (Holthuis, 1995).

Immediately after the foundation of the RMNH the director C.J. Temminck already maintained good contacts with other major museums in Europe and instigated a lively exchange policy, mainly using material from the Dutch East Indies, Suriname and Ghana to obtain material from parts of the world from which the RMNH only had small or no collections. Museums involved in these exchanges are those from Munich (material collected by J.B. von Spix), Paris (*Testudo dussumieri*), Berlin, Vienna and London, to name just a few of the most important ones. Thus, part of the type series of chelonians (and other reptiles and amphibians as well) have been split up between several European museums, because the concept of type specimens in the early 19th century was not as well developed as it is now, and series of specimens used for a type description were just considered as 'doubletten' (doubles) and not given special status and consequently freely used for exchange. This exchange policy was maintained throughout the history of the herpetological collection, but later was based on modern opinions about the value of material, especially type material. Chelonian material also reached the museum via other channels: three type specimens (a paratype of *Geoemyda spengleri sinensis* and two of *Batrachemys heliostemma* were obtained as gifts from foreign researchers, three paratypes (*Cyclemys pulchristriata* and two specimens of *Emys orbicularis occidentalis*) were obtained from animal dealers, and

one paratype (*E. orbicularis occidentalis*) was collected during fieldwork in 1967 by the senior author.

Most of the material of recent and fossil species here reported was collected in the 19th century (most chelonians and all crocodilians), and most of the descriptions also are from that century. One specimen (*Testudo indica Vosmaeri*) was collected and described in the 18th century, only a few specimens of chelonians were collected in the 20th century. Five descriptions of chelonians were published in the 20th century and two were published in the 21st century.

All fossil material here reported was collected by E. Dubois in the Dutch East Indies near the end of the 19th century and described in the early 20th century.

Material and methods

Part of the material dealt with here is preserved in alcohol and part is preserved as dry material: skeletons (complete or partial [mostly skulls]), skins and stuffed material. Van Lidth de Jeude (1898) reported on part of the dry material (skeletons, skulls and skeletonised specimens of turtles and tortoises with the horny scales still attached to the carapace) present at that time. Stuffed material or skins was not included. This publication in the RMNH is popularly known as the 'Catalogue Ostéologique' and material mentioned in it has labels with the indication 'Cat. ost.' followed by a letter corresponding with the letters mentioned in van Lidth de Jeude (1898). Part of this material in the meantime has been relabelled and now has serial RMNH numbers. The Cat. ost. letters are mentioned after the present serial number. However, the old Cat. ost. indication in all specimens remains in place, although it is superseded by the serial number for easier access and incorporation into the electronic database.

The original name and publication on which a nominal taxon is based have been indicated by an asterisk preceding the name. References in synonymy lists only concern publications which specifically mention RMNH type material. Thus, no reference is made to the most recent checklist of Fritz & Havaš (2007) under each species, but for present day Chelonian nomenclature we did follow this publication, with the exception of one name (*Dipsochelys dussumieri*) due to new data that were not taken into account in this publication, although the basic publications concerning the nomenclature of this species were referred to. For crocodile nomenclature we followed King & Burke (1989) and Ross (1990, 1992).

Current names for taxa are indicated in bold letters, either in the caption of each account, when the name did not change, or in a special section 'Current name'.

Collection acronyms are based on Frost (2009). The former Rijksmuseum van Natuurlijke Historie has gone through several name-changes and at the moment is officially registered as Foundation Nationaal Natuurhistorisch Museum, but the acronym RMNH (which refers to recent material and is recognized internationally) has been maintained in order to avoid confusion. In order to adhere to international standards, the herpetological collection numbers are now indicated as RMNH.RENA. The notation 'alc.' means preserved in ethanol 70%, 'RMNH. Dub.' refers to the RMNH Dubois collection of fossils. Names of fossil species are preceded by a †.

As usual in many old collections, type specimens often were not indicated as such, and only starting in the 1930s the curators of the RMNH herpetological collection

(L.D. Brongersma (1932-1958), M. Boeseman (temporarily supervising the herpetological collection between 1958 and 1966) and M.S. Hoogmoed (1966-2004) [the years mentioned by Gassó et al., 2007 are not correct]) made it a habit of clearly marking type material with red dots on bottles and pedestals, and noting these findings in the card-index and in the hand written register books, whenever they found indications material had been used for descriptions of new taxa. For chelonians and crocodiles we are convinced that all type material now has been identified, and that the present list is complete.

TESTUDINES
CRYPTODIRA

Chelydridae Gray, 1831
Chelonura Temminckii Troost in Harlan, 1835

**Chelonura Temminckii* Troost in Harlan, 1835: 157-158.
Macroclemys temminckii; King & Burke, 1989: 26.

Holotype: possibly RMNH.RENA 6166, 1 mounted ex. Loc.: 'Tennessee'. Leg.: G. Troost. Received in 1839.

Current name: *Macrochelys temminckii* (Troost in Harlan, 1835).

Remarks.— The name *Chelonura Temminckii* was taken from a manuscript by Troost written in 1835 (Harlan, 1835: 158; Holbrook, 1842: 151). According to Bour (1987: 340) and Pritchard (1989: 11) *Chelonura Temminckii* was described by Harlan (1835) on the basis of a specimen collected by Petival in 1835 and several drawings, also by Petival. If indeed Harlan only used the name provided by Troost then MNHN-AC 4540 in the Paris museum may be the holotype (Bour, 1987: 343). However, if Harlan used the name coined by Troost as well as the species description from Troost's manuscript, then RMNH.RENA 6166 in the Leiden museum should be regarded as the holotype. RMNH. RENA 6166 is a specimen sent by Troost to C.J. Temminck, director of the Leiden museum at that time. King & Burke (1989) also report MNHN-AC A.4540 as the holotype, but mention that Hoogmoed is of the opinion that RMNH.RENA 6166 is the holotype. RMNH records and the original label of the mounted specimen indicate that RMNH. RENA 6166 is the 'type' of '*Macroclemys Temminckii* Troost'. The author of the nominal species *Chelonura Temminckii* therefore is Troost in Harlan, 1835 (*fide* Hoogmoed, quoted in King & Burke, 1989). The type locality is 'a tributary stream of the Mississippi, which enters that river above Memphis, in West Tennessee' [U.S.A.] (Troost in Harlan, 1835: 158). In the RMNH archives there also is a drawing of the head of this species in lateral view in life. Harlan mentions that 'More than one specimen has been observed', which might lead to the conclusion that more than one specimen served as the basis for the description, and in that case there would have been several syntypes. It is not clear whether the observations were based on preserved material only, or also included live specimens. However, the fact that this specimen was sent by Troost and the fact that Harlan specifically mentions Troost's manuscript have convinced us that the RMNH specimen most likely is the holotype of *Chelonura Temminckii*, and that the specimen in

the Paris museum does not have type status. Duméril & Duméril (1851) described a single specimen, apparently complete, of this species, but its data are not mentioned. Bour (1987) describes a skull in the Paris museum (MNHN-AC A.4540) as the type, but his argumentation is not very convincing and it remains doubtful whether this indeed is a type (see above). According to Fritz & Havaš (2007) the name *Chelonura temminckii* is a nomen conservandum, see Opinion 660, ICZN 1963. Bour (1987) restricted the type locality to Wolf River, Shelby County, Tennessee, U.S.A.

Pictures.— Drawing of side of head in RMNH archives.

Emydidae Lydekker, 1889
Emys orbicularis occidentalis Fritz, 1993

**Emys orbicularis occidentalis* Fritz, 1993: 136, fig. 8, 10, 12-15.

Paratypes: RMNH.RENA 11371 A-B, 2 juvs. (alc.). Loc.: 'Tunesia'. Don.: E.C. Stol; RMNH.RENA 15003, 1 ♀ (alc.). Loc.: 'Ifrane (1650 m), Middle Atlas, Morocco'. Leg.: M.S. Hoogmoed, 23-vi-1967.

Pictures.— Fritz, 1993: 143, pl. 10c (RMNH.RENA 15003).

Geoemydidae Theobald, 1868
Cyclemys enigmatica Fritz, Guicking, Auer, Sommer, Wink & Hundsdörfer, 2008

Emys dentata Gray, 1831: errata (part).
Emys dhor; Lidth de Jeude, 1898: 6 (part, only Cat. ost. a).
Cyclemys oldhamii; Fritz et al., 1997: 198 (part).
**Cyclemys enigmatica* Fritz et al., 2008: 381.

Paratypes: RMNH.RENA 3838, 1 juv. (alc.) Loc.: 'Padang, Sumatra' [Indonesia]. Leg.: [L.] Horner; RMNH.RENA 6066, 6068, two stuffed adult females. Loc.: 'Sumatra' [Indonesia], Leg.: [S.] Müller; RMNH.RENA 27828 (Cat. ost. a) skeleton of adult female, Loc.: 'Java' [Indonesia]. Leg.: [H.] Kuhl & [J.C.] van Hasselt.

Remarks.— Fritz et al. (2008) incorrectly mention 'Hoiner' as collector of RMNH. RENA 3838, this should be Horner (= L. Horner, a member of the Dutch Natuurkundige Commissie). They also incorrectly refer to RMNH.RENA 6088 as a paratype, but this should be corrected to RMNH.RENA 6068. In table 4 on p. 382 the correct number RMNH.RENA 6068 is used. RMNH.RENA 6088 is a *Trachemys scripta* (Schoepff, 1792) collected by G. Troost in Tennessee. Fritz et al. (1997) identified the above four specimens, together with more RMNH material as *C. oldhamii* Fritz et al. (2008) when describing *C. enigmaticus* from Sumatra, Borneo, Java and the Malay Peninsula, only considered the above four specimens as paratypes. Fritz et al (1997) considered these four specimens as *C. oldhamii* Gray, 1863, together with six other RMNH specimens (RMNH. RENA 5003, 6062-65 and 27829) also from Sumatra, Borneo and Java. There is no reference to these last six RMNH specimens mentioned in Fritz et al. (1997) in the Fritz et al. (2008) publication, and thus they cannot be considered type material, although presumably they are *C. enigmatica* as well, as Fritz et al., 1997) did not consider them as *C. dentata*, the only other species of *Cyclemys* occurring sympatrically with *C. enigmaticus* in Sumatra, Borneo, Java and the Malay Peninsula (Fritz et al., 2008).

Cyclemys giebelii Hubrecht, 1881
(fig. 1)

**Cyclemys giebelii* Hubrecht, 1881: 45.

Syntype: RMNH.RENA 3348, 1 ex. (alc.). Loc.: 'Borneo' [Indonesia]. Leg.: C.A.L.M. Schwaner, 1844.

Current name: *Notochelys platynota* (Gray, 1834).

Remarks.— This is the specimen which is fully described by Hubrecht (1881). In his description he also refers to four juvenile specimens from the island Banka, described by Giebel (1866: 15). These also form part of the type series, but their present whereabouts could not be ascertained. They certainly do not form part of the RMNH collection.

Pictures.— Giebel (1866: pl. 3) provides drawings of the syntypes that are not part of the RMNH collection and of which the present whereabouts are not known.

Cyclemys pulchristriata Fritz, Gaulke & Lehr, 1997

**Cyclemys pulchristriata* Fritz, Gaulke & Lehr, 1997: 203.

Paratype: RMNH.RENA 4751, 1 juv. (alc.). Loc.: 'Annam' [Vietnam]. Leg.: H. Fruhstorfer.

Fig. 1. *Notochelys platynota*, RMNH.RENA 3348, alcohol preserved syntype of *Cyclemys giebelii* in original storage bottle. Note the red dot indicating a type specimen and the recent label wrongly suggesting this would be the holotype of *N. platynota*. Also note the old label with the original name, attached to the outside of the original bottle in the late 19th century, damaged by different climates it was subjected to in the course of time in the storage rooms, but still legible.

Remarks.— Fritz et al. (1997) based their description of *C. pulchristiata* on material which mostly came from the pet trade. Only material collected by H. Fruhstorfer in Annam was provided with a reliable locality. Material collected by Fruhstorfer is present in museums in Vienna, Leiden, Frankfurt, Stuttgart and Hamburg. In most museums its locality is indicated as 'Annam', but the material in Vienna is provided with a more detailed locality: Phuc Son (Annam, Vietnam), and possibly the material in other museums which was provided by Fruhstorfer comes from this locality as well.

Emys borneoensis Schlegel & Müller, 1845
(figs 2, 3)

**Emys borneoensis* Schlegel & Müller, 1845: 30.
Clemmys borneoensis; Strauch, 1865: 87.
Batagur borneensis; Hubrecht, 1881: 47.
Callagur borneoensis; King & Burke, 1989: 31; Fritz & Havaš, 2007: 213.
Batagur borneoensis; Fritz & Havaš, 2007: 367 (Appendix).

Fig. 2. *Batagur borneoensis*, RMNH.RENA 3296, alcohol preserved juvenile, syntype of *Emys borneoensis*.

Fig. 3. *Batagur borneoensis*, RMNH.RENA 6210, stuffed syntype of *Emys borneoensis*, with original label with information added later in pencil.

Syntypes: RMNH.RENA 3296, 1 ex. (alc.). Loc.: 'Borneo' [Indonesia]. Leg.: S. Müller; RMNH.RENA 6210, 1 mounted ex. Loc.: 'Borneo' [Indonesia]. Leg.: S. Müller, 1837.

Current name: *Batagur borneoensis* (Schlegel & Müller, 1845).

Remarks.— Schlegel & Müller (1845: 30) mentioned to have seen three specimens of this species deposited in the National Museum of Natural History in Leiden, but only two of them could be located. The third specimen probably was exchanged with one of the large European museums. King & Burke (1989) mention RMNH.RENA 6210 as 'holotype'. Apparently they were not aware of the existence of RMNH.RENA 3296, and neither of the fact that Schlegel & Müller (1845) based their description on three specimens (clearly stating so), without indicating a holotype among them and those three specimens thus are syntypes. King & Burke's (1989) action cannot be considered a fixation of lectotype as mentioned in article 74.6 of the International Code of Zoological Nomenclature (ICZN, 1999), because it was clear from the beginning that three specimens were the basis of the description.

Temminck's 'Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche bezittingen, 1839-1844. Zoologie' was published in parts over a period of 6 years. Husson & Holthuis (1955) provide details on the publication dates of the parts containing reptiles. We here are concerned only with pages 1-36, of which pages 1-28 deal with crocodilians (see below), and pages 29-36 with turtles and tortoises. Plate 4, showing *Testudo emys* was published on April 24, 1840, pages 29-36, dealing with turtles and tortoises, were published on June 26, 1845. Thus, turtle and tortoise names coined by Schlegel & Müller in Temminck '1839-1844' (*Emys borneoensis*, *Emys subtrijuga*, *Testudo emys* and *Testudo forstenii*) should be considered having as year of publication 1840 (*Testudo emys*), or 1845 (*Emys borneoensis*, *Emys subtrijuga* and *Testudo forstenii)*. This has no nomenclatural consequences.

The accepted name for this species for a long time was *Callagur borneoensis* (*e.g.* Fritz & Havaš, 2007), but recent molecular research (Praschag et al., 2007) showed *Callagur* to be a junior synonym of *Batagur*. Thus, Fritz & Havaš (2007: 367) had to make a change of the genus name in an Appendix to their checklist.

Pictures.— none known.

Emys dentata Gray, 1831

Emys Hasseltii Boie (nomen nudum) in Fitzinger, 1826:45.
Emys Dhor Gray, 1831:20.
Emys Hasselti; Gray, 1831:20 (part) (nomen nudum).
**Emys dentata* Gray, 1831: page errata.
Emys dhor; Lidth de Jeude: 1898: 6 (part, only Cat. ost. b, c, d).
Emys hasseltii; Lidth de Jeude: 1898: 6.
Cyclemys dentate; Fritz et al., 1997: 188 (part).
Emys hasselti; Fritz et al., 1997: 192 (part).
Cyclemys oldhamii; Fritz et al., 1997: 198 (part).

Paralectotypes: RMNH.RENA 6062, 1 mounted ex., Loc.: 'Java' [Indonesia], Leg.: [H.] Kuhl & [J.C.] van Hasselt; RMNH.RENA 6063, 1 mounted ex., Loc.: 'Java' [Indonesia], Leg.: [H.] Kuhl & [J.C.] van Hasselt; RMNH.RENA 6067, 1 mounted ex., Loc.: 'Malacca' [Malaysia] Leg. P. Diard, 1829; RMNH.RENA 40474 (Cat. ost. d), skull, no locality or collector.

Current name: RMNH.RENA 6063, 6067, 40474 *Cyclemys dentata* (Gray, 1831).

RMNH.RENA 6062 *Cyclemys enigmatica* Fritz, Guicking, Auer, Sommer, Wink & Hundsdörfer, 2008.

Remarks.— The name *Emys Hasseltii* Boie was mentioned by Fitzinger (1826) as a nomen nudum (Fritz & Havaš, 2007) and as *Emys Hasselti* by Gray (1831) in the synonymy of *Emys dhor* (= *dentata*) and indicated to be a Boie manuscript name in the Leiden Museum. The name *E. Hasseltii* was coined by H. Boie (first curator of Herpetology of the RMNH) in his 'Erpétologie de Java', which unfortunately was never published. H. Boie prepared a description (with coloured plates) of the material indicated as *Emys Hasseltii* for publication in his 'Erpétologie de Java', which was intended to be published posthumously, but due to the Belgian insurrection in 1830, the work at the Brussels printers was stopped and never started again (Holthuis, 1995; Hoogmoed, 1982). The manuscript and the coloured plates are still in the archives of the Nationaal Natuurhistorisch Museum in Leiden as a tragic reminder of the collections made by the first explorers of the RMNH that all died too early to be able to see the fruits of their pioneer work in print.

Lidth de Jeude (1898), under *Emys dhor* lists four specimens (three skeletons and a skull), and in the data for Cat. Ost. b and d, he specifically mentions the name *Emys hasseltii* Boie. Fritz et al. (1997: 192/193) state: 'Die eindeutige Beschränkung auf nur drei Stücke ist insofern bemerkenswert, als von Gray (1831) angegeben wird, das mit seiner *Emys dentata* die von ihm im Leidener Museum untersuchte '*Emys hasselti* Boie' (nomen nudum) identisch sei. Wie wir uns selbst überzeugen konnten, sind im Nationaal Natuurhistorisch Museum Leiden eine ganze Reihe von *Cyclemys* mit diesem Namen etikettiert. Davon lag Gray aber ganz offensichtlich bei der Beschreibung von *Emys dentata* nur ein einziges Exemplar aus Java vor, welches in den Bestand des Londoner Museums überging und heute die Inventarnummer BMNH 1946.1.22.62 trägt.' [= The clear restriction to only three specimens is rather remarkable, because Gray (1831) indicates that the '*Emys hasselti* Boie' (nomen nudum) which he studied in the Leiden museum were identical with his *Emys dentata*. Like we ourselves could see, in the Nationaal Natuurhistorisch Museum in Leiden there is quite a number of specimens of *Cyclemys* that are labeled with this name. Of these Gray only had before him for the description of *Emys dentata* a single specimen from Java, which was transferred to the collection of the London museum and now has the number BMNH 1946.1.22.62].

BMNH 1946.1.22.62 (ex 1828.5.12.1, chosen as lectotype of *Emys dhor* = *E. dentata* Gray 1831 by Fritz et al. 1997), was obtained from the Leiden Museum in 1828 and formed part of the series indicated with the name *E. Hasselti* Boie (Fritz et al., 1997). As Gray (1831: vi-vii) visited the Leiden museum, we may assume that he saw the material indicated as *E. Hasseltii* collected by members of the Natuurkundige Commissie, and used those specimens to form his idea of *Emys dentata*. We therefore consider all specimens in the Leiden museum belonging to either *Cyclemys dentata* (RMNH.RENA 6063, 6067, 40474) or *C. enigmatica* (RMNH.RENA 6062), present at the time of Gray's visit to Leiden and having the name *Emys Hasseltii* on their original labels, as part of Gray's type series of *E. dentata* (which of course also includes the BMNH 1946.1.22.62 lectotype). This is in accordance with the rules of nomenclature (ICZN, 1999) for that period (72.1.1, 72.4.1 and 72.4.1.1), and consequently all four specimens can be considered as paralectotypes. We thus disagree with Fritz et al.'s (1997) opinion that Gray's

(1831) description of *Emys dentata* only would be based on three specimens. The RMNH has more material of *C. dentata* that was collected by members of the Natuurkundige Commissie and was present at the time of Gray's visit to the Leiden museum, but as these lack any indication of the name *E. Hasseltii* on the original labels, we have not considered them as paralectotypes of *E. dentata* Gray 1831.

Pictures.— colour plates of *Emys Hasseltii* in archive RMNH (Erpétologie de Java manuscript of Boie), which at the moment (hopefully temporarily) cannot be found.

Emys subtrijuga Schlegel & Müller, 1845
(fig. 4)

Emys trijuga; Temminck & Schlegel, 1834: 64.
**Emys subtrijuga* Schlegel & Müller, 1845: 30; Hubrecht, 1881: 48.
Malayemys subtrijuga; Brophy, 2004: 73.

Lectotype: RMNH.RENA 6082, mounted ex. Loc.: 'waarschijnlijk in het landschap Bantam' [= probably in the Bantam region] 'Java' [Indonesia]. Leg.: [H.] Kuhl and [J.C.] van Hasselt.
Paralectotypes: RMNH.RENA 6084, 6085, two mounted ex. Loc.: 'waarschijnlijk in het landschap Bantam' [= probably in the Bantam region.] 'Java' [Indonesia]. Leg.: [H.] Kuhl and [J.C.] van Hasselt.

Current name: *Malayemys subtrijuga* (Schlegel & Müller, 1845).

Remarks.— Hubrecht (1881) discussed the confusion that reigned about this species in the early years after its description and categorically stated that the three type specimens were in Leiden and that a specimen in the British Museum (Natural History) received from the Utrecht museum in Holland could not have been one of the types. Brophy (2004) studied the three syntypes and indicated RMNH.RENA 6082 as lectotype. He further discussed the confused nomenclatural history and agreed with Hubrecht (1881) that BMNH 1947.3.4.53 could not be the holotype of *Malayemys subtrijuga* as had formerly been assumed.

Pictures.— colour plates in archive RMNH (Erpétologie de Java manuscript of Boie), which at the moment (hopefully temporarily) cannot be found.

Fig. 4. *Malayemys subtrijuga*, RMNH.RENA 6682, stuffed lectotype *Emys subtrijuga*. Note the indication K&vH in the lower left corner of the label, indicating the collectors H. Kuhl and J.C. van Hasselt.

Emys vulgaris Gray, 1831
(fig. 5)

Emys vulgaris Gray, 1831: 24 (part).
Emys Sigritzii Gray, 1831: 24.
Cl. Sigritzii Temminck & Schlegel, 1834: 53.
Emys Siegritzii; Fritz & Wischuf, 1997: 248, 249.
Mauremys rivulata; Fritz & Wischuf, 1997: 256

Paralectotype: RMNH.RENA 3327 (alc.). Loc. 'Dalmatia' [former Yugoslavia]. Leg.: Michahelles.

Current name: RMNH.RENA 3327 *Mauremys rivulata* (Valenciennes, 1833).

Remarks.— The nomenclatural history of RMNH.RENA 3327 is rather confused and complicated. In his description of *Emys vulgaris*, Gray (1831) mentioned that he had seen a specimen in Leiden ['*Emys Sigritzii*: Michaux, MSS (v.Mus. Leyd. Mus.Brit)'], which he considered as belonging to his *E. vulgaris* (note that Gray on the errata page rectifies Michaux to Michahelles), thus making it a syntype of that name. Gray's *E. vulgaris* generally has been considered a synonym of *Mauremys leprosa* (Schweigger, 1812), but Fritz & Wischuf (1997) pointed out that it was based on a mixture of *Mauremys leprosa*, *M. rivulata* and a species of *Rhinoclemmys*, either *R. areolata* (Duméril & Bibron, 1851) or *R. pulcherrima* (Gray, 1856). The name *E. vulgaris* could constitute a threat to the stability of the last three species names mentioned. In order to avoid nomenclatural upheaval, Fritz & Wischuf (1997) selected the drawing of a juvenile *M. leprosa* published by Gray (1831 pl. 4, upper drawing) as lectotype of *E. vulgaris*, thus removing possible problems for the other species names mentioned. They also considered the possibility of RMNH.RENA 3327 being a syntype of *Clemmys Sigriz*, but discarded this possibility on the basis of Michahelles' (1829) clear statement about the provenance (Spain) of the specimens of *C. Sigriz*, which he said were different from specimens from Dalmatia.

RMNH.RENA 3327 on the old label on the outside of the bottle in which it is preserved (still readable in the 1990s, but now illegible) was indicated as being the possible type of *Clemmys Siegritzii* (sic!, misspelling on label) (Fritz & Wischuf, 1997: 248, 249;

Fig. 5. *Mauremys rivulata*, RMNH.RENA 3327, alcohol preserved syntype *Emys vulgaris*. Note 19th century glass-bulb attached to keep specimen floating upright in bottle.

MSH pers. obs.). This is strengthened by a remark of Temminck & Schlegel (1834: 53) about this name: 'Mr. Michahelles l'avait déjà décrit d'après les individues, rapports de Dalmatie, et qu'il a bien voulu céder à notre Musée.' [= Mr. Michahelles already described it after specimens reported from Dalmatia, and has been so kind to present it to our museum]. In footnote 3 referring to Michahelles' (1829) publication they use the name *Cl. Sigritzii*, a name never used by Michahelles, who used *C. Sigriz* in honour of the collector. However, this taxon has as its type locality '*Hispaniae meridionalis, venditur in urbibus Hispaniae*' (p. 1300) and not Dalmatia, as suggested by Temminck & Schlegel (1834). Although on the old label a more recent identification as *Clemmys leprosa* is written in pencil, the specimen in RMNH.RENA 3327 actually is a halfgrown *Mauremys rivulata*, a species that occurs near Ragusa (= Dubrovnik) in former Yugoslavia (Fritz & Wischuf, 1997), which is a locality mentioned by Michahelles (1829), being a place where *Clemmys caspica* [= *Mauremys rivulata*] had been collected. In the original register-book RMNH.RENA 3327 is registered as: '*Emys caspica*, Dalmatie, Michah.'. Thus there does not seem to be any doubt about the locality and the collector. In Spain the species of *Mauremys* occurring there is *M. leprosa*, and most authors have correctly considered *Clemmys Sigriz* Michahelles, 1829 a synonym of *M. leprosa*. The indication 'type' on the old label of RMNH.RENA 3327 probably was due to the misunderstanding of Temminck & Schlegel about the correct identification and allocation of RMNH.RENA 3327.

Emys vulgaris japonica Temminck & Schlegel, 1834
(figs 6, 7)

[*Emys vulgaris*] variété japonaise Temminck & Schlegel, 1834: 54.
Emys vulgaris, variété du Japon Temminck & Schlegel, 1834: 77.

Fig. 6. *Mauremys japonica*, RMNH.RENA 3331, alcohol preserved syntype of *Emys vulgaris japonicus.*

Fig. 7. *Mauremys japonica*, RMNH.RENA 3333, alcohol preserved syntypes of *Emys vulgaris japonicus* in their original storage bottle.

* *Emys vulgaris japonica* Temminck & Schlegel, 1834: 139.
Emys palustris var. *Japon* Temminck & Schlegel, 1834: pl. 8 figs 1-4; pl. 9.
Emys vulgaris japonica; Schlegel, 1844: 126, pl. 41.
Emys Japonica; Gray, 1844:19; Gray, 1873: 34.
Mauremys japonica; King & Burke, 1989: 42.

Syntypes: RMNH.RENA 3331, 1 ex. (alc.). Loc.: 'Japan'. Leg.: Ph.F. von Siebold; RMNH.RENA 3332, 1 ex. (alc.). Loc.: 'Japan'. Leg.: Ph.F. von Siebold; RMNH.RENA 3333, 2 hatchlings (alc.). Loc.: 'Japan' Leg.: Ph.F. von Siebold; RMNH.RENA 3334, 1 juv. (alc.). Loc.: 'Japan'. Leg.: Ph.F. von Siebold; RMNH.RENA 6142, 1 mounted ex. Loc.: 'Japan'. Leg. Ph.F. von Siebold.

Current name: *Mauremys japonica* (Temminck & Schlegel, 1834).

Remarks.— There is some confusion about the exact year of publication of the part Chelonia of the Fauna Japonica. Wermuth & Mertens (1961) mention 1833, Fritz & Havaš (2007) mention 1835. According to Stejneger (1907: 542-543), the volume *Reptilia* from the Fauna Japonica was issued in different parts. *Chelonii* (pp. 1-80, pls. 1-9) according to him appeared in 1835. Sherborn & Jentink (1895: 149) and Holthuis & Sakai (1970:75, based on Dutch government archives), however, give 1834 as publication date for this section. We here accept 1834 as publication date for the chelonian part of the Fauna Japonica.

The name on the original plates is erroneously '*Emys palustris* Var. *Japon.*'. Temminck & Schlegel (1834) acknowledge the mistake in footnote 7 (p. 52): 'Cette espèce portée par méprise sur notre planche sous le nom d'Emys palustris' [= Due to a mistake, on our plate this species is mentioned under the name Emys palustris].

Schlegel (1844) mentions the type specimens and says that between 1833 and the moment of writing the RMNH had received from Mr. Bürger drawings of an adult and juvenile specimen made after life in Japan [by the Japanese artist Kawahara Keiga (also called Tojosk by Von Siebold and Bürger)]. Thus it is clear that the specimens depicted on pl. 41 (Schlegel, 1844) are not drawings of any type specimens, and indeed they do not agree with any of the RMNH types listed above.

RMNH.RENA 3331 has the hand of the right forelimb mutilated into a clubfoot with three low pyramids of muscular tissue covered by skin. One of the pyramids has a stump of nail, the others not.

RMNH.RENA 3333 contains two hatchlings, of which the lower one in the bottle (the one without a floating glass bulb) has been depicted on pl. 8 fig. 1 (Temminck & Schlegel, 1834).

Gray (1844; 1873) reports an adult and a half-grown specimen in the collection of the British Museum (Natural History) that were received from the Leiden museum. These specimens might have formed part of the type series.

King & Burke (1989) mention RMNH.RENA 3330 and MNHNP 1954 as syntypes of *Emys vulgaris japonica,* but this is incorrect, as these three specimens are syntypes of *Emys vulgaris picta* = *Chinemys reevesii* (see below).

Pictures.— Temminck & Schlegel (1834: pl.8, fig.1 (RMNH.RENA 3333), fig. 2 and 3 (RMNH.RENA 3334), fig. 4 (RMNH.RENA ??), pl. 9 (RMNH.RENA 3332); Schlegel (1844: pl. 41).

Emys vulgaris picta Schlegel, 1844
(fig. 8)

**Emys vulgaris picta* Schlegel, 1844: 127; pl. 42.
Emys Japonica; Duméril & Duméril, 1851: 8.

Syntypes: RMNH.RENA 3330 A-B, 2 ex. (alc.). Loc.: 'Japan'. Leg.: H. Bürger.

Current name: *Mauremys reevesii* (Gray, 1831).

Remarks.— The publication date on the first page of Schlegel's *Abbildungen* is 1837-1844, and the work was issued in parts. See Stejneger's *Herpetology of Japan* (1907: 540) for the exact dates of publication.

Schlegel (1844) affirmed that three specimens of this species were deposited in the National Museum of Natural History in Leiden by Bürger, but only two of them have been located in the RMNH collections. Duméril & Duméril (1851) mention that the Paris museum has one specimen of this species, received from the Leiden museum. This might very well be the 'missing' third specimen mentioned by Schlegel (1844) and thus can be regarded as one of the syntypes (MNHNP 1954). At the time there was a lively contact between the Paris and Leiden museums, with many specimens being exchanged, and G. Bibron spending time in the Leiden collection. Despite using the name *Emys Japonica* for their specimen, Duméril & Duméril (1851) further in the text clearly refer to '*E. vulgaris japonica picta* Schlegel, *Abbildung. Neuer Amphib*., p. 127, pl. 42'. It should be noted that Schlegel (1844) never used the name *Emys vulgaris japonica picta*, as mentioned by Duméril & Duméril (1851) for this taxon, just *Emys vulgaris picta*

The drawing on pl. 42 (Schlegel, 1844) sent by Bürger is of an adult specimen in life, [made in Japan by Kawahara Keiga] and does not agree with the adult specimen in RMNH.RENA 3330 (the pattern of lines on the neck and side of the head is clearly different).

Pictures.— Schlegel (1844): pl. 42.

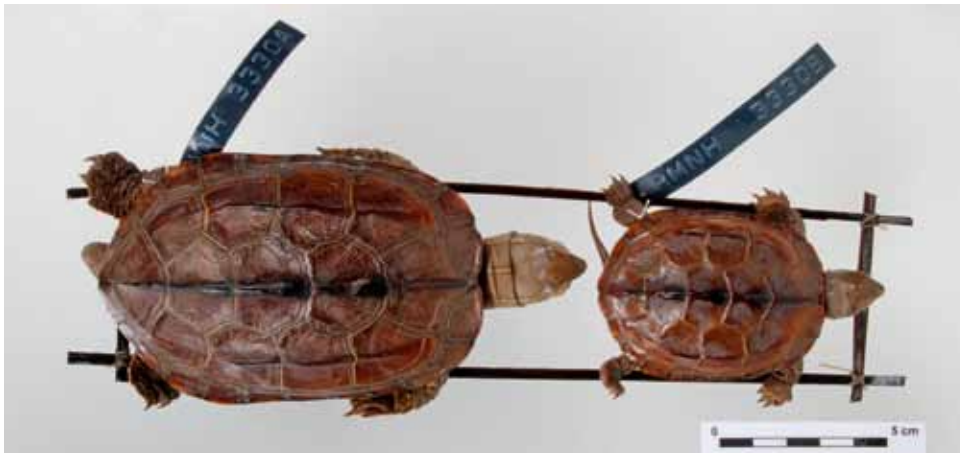

Fig. 8. *Mauremys reevesii*, RMNH.RENA 3030 A-B, alcohol preserved syntypes of *Emys vulgaris picta*. Note the wooden sticks used to keep the specimens in position, apparently commonly used in the early 19th century to pose specimens.

Geoemyda spengleri sinensis Fan, 1931

**Geoemyda spengleri sinensis* Fan, 1931: 146.

Paratype: RMNH.RENA 5887, 1ex. (alc.). Loc.: 'Loshiang' [Yao-shan, Kwangsi, South China]. Leg.: S.S. Sin. Don.: Sun Yat-Sen University, Guangzhou, P.R. China.

Current name: *Geoemyda spengleri* (Gmelin, 1789).
Pictures.— None known.

† *Hardella isoclina* Dubois, 1908

**Hardella isoclina* Dubois, 1908:1270.
Clemmys ? *isoclina*; Williams, 1957: 235.

Holotype: RMNH Dub. 2722 (carapace and plastron): Pleistocene, Trinil Beds, Kedoeng Panas, Java, Indonesia.

Current name: † *Mauremys*? *isoclina* (Dubois, 1908). As Fritz & Havaš (2007) do not include fossil species, the present identification is based on 'circumstantial evidence' as provided by Williams (1957) who considered this species most closely related to *Clemmys mutica* (see below).

Remarks.— Dubois (1908) only briefly diagnosed this taxon. Williams (1957) studied the type and referred material from the RMNH Dubois collection and came to the conclusion that 'The Trinil form appears to resemble most closely the living species *mutica* from southern China, Formosa, Hainan, and Japan, and since *mutica* is currently though questionably assigned to the genus *Clemmys* it will be convenient for the present to refer the Dubois species to *Clemmys* with a query'. Williams (1957) provided an extensive description and several photographs and drawings of the holotype.

Chelonian systematics recently has been in turmoil, especially concerning Southeast Asian species. *Clemmys* nowadays only contains a single, small species and its distribution is restricted to eastern North America. *Clemmys mutica* now is considered a member of *Mauremys* (Fritz & Havaš, 2007), and became *Mauremys mutica*. *Mauremys* is a genus occurring in southern Europe, northern Africa, the Middle East, Southeast and East Asia (China, Taiwan, Vietnam, Korea, and Japan). The presence of a fossil *Mauremys* on Java would constitute a considerable extension of its distribution area, but would not be too farfetched. However, the present identification is only based on the nomenclatorial changes involving *Mauremys mutica*, and new study of the holotype would be very desirable to come to a definite conclusion. Jaekel (1911) describing fossil remains from the Trinil beds does not mention Dubois's *Hardella isoclina*, but only mentions two species of *Batagur*, which also belong to the family Geoemydae.

Pictures.— Williams (1957).

Testudinidae Gray, 1825
Testudo dussumieri Gray, 1831

**Test. Dussumieri*; Gray, 1831a:3 (*nomen nudum*); Gray, 1831b: 9; Temminck & Schlegel, 1834: 75.
Testudo gigantean; Hubrecht, 1881: 43.

Testudo dussumieri Bour, 1984: 171; Bour, 2006: 20-22; Pritchard, 1986: 532; Frazier, 2009: 39.
Dipsochelys dussumieri; Gerlach, 2004: 67; Bour, 2006: 21, 22; Grünewald, 2009b: 136.
[Testudo] dussumieri; Cheke, 2009: 175.

Lectotype: RMNH.RENA 3231, 1 juv. (alc.) Loc.: 'Île Aldabra près de Madagascar' [Aldabra Islands, Seychelles]. Leg.: J.-J. Dussumier.

Current name: *Dipsochelys dussumieri* (Gray, 1831)

Remarks.— Hoogmoed & Crumly (1984) did not mention this specimen because at the time it had not yet been recognised as a type specimen. Bour (1984) was the first to report it as 'le type' after Temminck & Schlegel (1834) and Hubrecht (1881) had mentioned this specimen without reference to its status. According to Temminck & Schlegel (1834) this specimen from 'Aldebra' (sic!) was received under the name *T. Dussumieri* from the Paris museum, thus not directly from Dussumier, but as a donation or an exchange from the Paris Museum. This is the only reference about the acquisition of this specimen, as neither in Paris, nor in the Leiden archives any documentation about the way it was obtained could be found (Bour, 2006: 22).

Gray (1831b) provided a short description of a juvenile specimen, which he saw in the Leiden museum. He attributed the name to Schlegel (but see statement above by Temminck & Schlegel (1834) from which it is clear that the name was already provided by the Paris museum), but as Schlegel (or anybody else) never published this name, Gray becomes the author. Gray (1831a) described *Testudo dussumieri* in the synonymy of *Testudo indica* as a *nomen nudum*, but Gray (1831b) provided a short description . Bour (2006) designated the specimen as the lectotype, as Gray (1831b) also referred to a figure of another specimen and thus based himself on a series of two specimens. However, the statement by Temminck & Schlegel (1834) mentioned above shows that references in the literature to *Testudo dussumieri* Schlegel (in Gray) (*e.g.* Gray, 1831a, 1831b: 9; Fitzinger, 1835: 122; Fritz & Havaš, 2007: 265) are not correct. Schlegel did not coin the name, neither in a manuscript, nor as a label name, apparently somebody in Paris coined the name. Gray (1831b: vii) following the agreement with Temminck, mentioned that he saw a specimen with this name on its label in the Leiden museum, but erroneously assumed that this label name had been given by Schlegel, which according to Schlegel's own words (see above) was not true.

After Bour (1984) and Pritchard (1986) published their papers doubting the identity of the holotype of *Testudo gigantea* Schweigger, 1812 (at that time considered lost) there has been a vivid discussion concerning the correct name, both generic and specific for the Aldabra tortoise. Frazier (2006), just for nomenclatural, not for taxonomic reasons, designated a neotype, with the intention to stabilise the name. However, Bour (2006) reported the rediscovery of Schweigger's holotype, which clearly is a specimen of *Geochelone denticulata* (Linnaeus, 1766) (as already hypothesized by Pritchard (1986)). This re-discovery of the holotype clearly shows that *T. gigantea* Scheigger, 1812 is a junior synonym of *T. denticulata* and makes the designation of the neotype void. Bour (1984: 171, footnote 1) mentioned the existence of RMNH.RENA 3231 and provisionally considered it a 'nomen oblitum'. Bour (2006) designated this specimen as lectotype of *Testudo dussumieri* and considered it available. Frazier (2009) appealed to the International Commisision of Zoological Nomenclature (Case 3463) to maintain the specific name

gigantea, recognise the neotype he designated and suppress *T. dussumieri*. Bour & Pritchard (2009) made a very clear defence for disregarding the neotype of *T. gigantea* and accepting the name *Dipsochely dussumieri*, which has been in regular use since the 1990's for the Aladabra tortoise. Although the ICZN has not yet given its opinion on which scientific name should be used for the Aldabra tortoise, we here follow Bour & Pritchard (2009) in recognising that, due to the new situation with the holotype surfacing, the neotype designation is no longer valid and that the name *T. dussumieri* becomes available, based on the perfect juvenile specimen RMNH.RENA 3231, completely preserved in alcohol, that without any doubt belongs to the Aldabra tortoise and has a good locality. The specimen was reported to come from 'Aldebra' (sic!) by Temminck & Schlegel (1834), and this same locality (Île Aldabra prés de Madagascar) [= Aldabra island, near Madagascar] also appears in the old handwritten register of the RMNH and on the original handwritten label of RMNH.RENA 3231. Matyot (2009) doubts whether Dussumier ever visited Aldabra, but Bour et al. (2010) and Cheke (2010) showed that Dussumier, even if he would not have visited Aldabra, easily could have obtained material from there. However, this all remains speculative, the data on the label of RMNH. RENA 3231 are the only firm data that exist and have to be accepted as correct. It should be noted (Dubois et al, 2010) that despite all the vehement discussions on this issue, only three professional herpetologists (R. Bour, M.S. Hoogmoed, P.C.H. Pritchard) have ever studied RMNH.RENA 3231 and all three came to the conclusion that RMNH. RENA 3231 is a juvenile Aldabra tortoise.

Pictures.— Gerlach, 2004: 68 (dorsal, lateral and ventral view); Bour, 2006: 21, fig. 3 (lateral, dorsal and ventral view); Grünewald 2009b: 137 (dorsal and ventral view), 138 Lateral view and detail head), 139-141 (labels).

Testudo emys Schlegel & Müller, 1840
(fig. 9)

**Testudo emys* Schlegel & Müller, 1840: pl. 4; Schlegel & Müller, 1845: 34; Lidth de Jeude, 1896: 197, pls. 5, 6; Lidth de Jeude, 1898: 4.

Fig. 9. *Manouria emys*, RMNH.RENA 17967, skull of syntype of *Testudo emys*.

Testudo emydoides Duméril & Duméril, 1851: 4.
Manouria emys; Hoogmoed & Crumly, 1984: 251; King & Burke, 1989: 92.

Lectotype: RMNH.RENA 3808, 1 ex. (alc.). Loc.: 'Sumatra' [Indonesia]. Leg.: S. Müller.
Paralectotypes: RMNH.RENA 6005, 1 mounted ex., RMNH.RENA 6030, 1 mounted ex., both: 'Batang Singalang, Sumatra' [Indonesia]. Leg.: S. Müller. RMNH.RENA 17967 (Cat. ost. a, 41 cm), 1 skeleton. Loc.: 'Batang-Singalang' [Indonesia]. Leg.: S. Müller.

Current name: *Manouria emys emys* (Schlegel & Müller, 1840).

Remarks.— Due to the complicated publication history of Temminck's 'Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche bezittingen, 1839-1844. Zoologie' (see under *Emys borneoensis*), with plates and parts appearing in different fascicules in different years, the publication date of *Testudo emys* must be considered to be (April 24) 1840, the year in which plate 4, on which the species is pictured with its name, appeared (Husson & Holthuis, 1955). Only on June 26, 1845 the complete description of *Testudo emys* appeared (Husson & Holthuis, 1955). Schlegel & Müller (1840, 1845) based their description on a series of six specimens, which consequently were the syntypes. Four of these are still present in Leiden. One was exchanged with the Museum d'Histoire Naturelle, Paris (MNHN 9422) (Duméril & Duméril, 1851; Hoogmoed & Crumly, 1984). This Paris specimen is another paralectotype of *Testudo emys*, received from the Leiden Museum, collected by S. Müller at the river Aneh, Sumatra and it also is the holotype of *Testudo emydoides* Duméril & Duméril, 1851.

Schlegel & Müller (1845: 36) give as locality for 'three or four' of the specimens: 'Sumatra (…) aan de zuiderzijde van den Goenong Singalang (…) rivier Aneh' [Sumatra, south side of Gunung Singalang, (…) Aneh river]. They also received some other ('eenigen') specimens from 'de voorbergen beoosten Padang' [low mountains east of Padang, Sumatra].

Hoogmoed & Crumly (1984: 251) designated RMNH.RENA 3808 as lectotype. The lectotype RMNH.RENA 3808 is the specimen depicted by Müller & Schlegel (1840, pl. 4). Lidth de Jeude (1896) discussed the Leiden specimens of *Manouria emys* (indicating specimens with letters that have no relation to the letters used in his 'Catalogue Ostéologique'), among which four syntypes, extensively and provided pictures of plastra and a skull of RMNH.RENA 40186 (cat. ost b (not a syntype)). It seems useful to provide additional data on the material mentioned by him. His specimen 'a' is RMNH.RENA 3808, 'b' is RMNH.RENA 6005, 'c' is RMNH.RENA 6030, 'd' is RMNH.RENA 17967 (cat. ost. a), 'e' was a recently acquired specimen (January 1896, Padang, Zool. Garden Rotterdam) RMNH.RENA 40186 (cat. ost. b), and 'f' was a specimen at the time still alive in the Zoological Garden Rotterdam. Thus, Lidth de Jeude's (1896) 'a', 'b', 'c' and 'd' were the syntypes of the species. RMNH.RENA 17967 is a skeleton that still has the horny scales attached to the carapace. The skull and lower jaw, the cervical vertebrae and the bones of the right forelimb have become detached from the skeleton and are stored in a separate cardboard box.

Pictures.— Schlegel & Müller, 1840: pl. 4, figs 1-5 (RMNH.RENA 3808); Lidth de Jeude, 1896: pls. 5 fig. 1 (RMNH.RENA 17967), fig. 3 (RMNH.RENA 6030); Hoogmoed & Crumly, 1984: 252 (fig. 5), 253 (fig. 6 = RMNH.RENA 3808).

Testudo Forstenii Schlegel & Müller, 1845

**Testudo Forstenii* Schlegel & Müller, 1845: 30.
Indotestudo forstenii; Vervoort, 1981: 246; Hoogmoed & Crumly, 1984: 243; King & Burke, 1989: 89.

Holotype: RMNH.RENA 3811, 1 ex. (alc.)(carapace 25 cm). Loc.: 'Gilolo' [Halmahera, Indonesia]. Leg.: E.A. Forsten.

Current name: *Indotestudo forstenii* (Schlegel & Müller, 1845).

Remarks.— As can be seen in the pictures provided by Vervoort (1981) and by Hoogmoed & Crumly (1984) (actually the dorsal and ventral views are the same photos) a number of marginal scutes had already become detached from the bony carapace at that time. At the moment of writing more scutes (including costals) have become detached and parts of them are still in the container with the specimen. For further comments on this specimen see Hoogmoed & Crumly (1984) who also provide measurements.

Pictures.— Vervoort, 1981: 246 (fig. 9, dorsal and ventral view); Hoogmoed & Crumly, 1984: 246 (fig. 2, dorsal, ventral and lateral view).

Testudo Strauchi Lidth de Jeude, 1893

**Testudo Strauchi* Lidth de Jeude, 1893: 312, pl. 9.
Psammobates geometricus; Hoogmoed & Crumly, 1984: 257.

Holotype: RMNH.RENA 6011, 1 mounted ex. Loc.: 'Cape of Good Hope' [South Africa]. Leg.: [H.] Kuhl and [J.C.] van Hasselt.

Current name: *Psammobates geometricus* (Linnaeus, 1758).

Remarks.— The specimen was complete in 1893 (see Lidth de Jeude, 1893: pl. 9). The left hind leg of this specimen is now missing, as already shown in Hoogmoed & Crumly (1984: fig. 8), and the right front leg now is detached from the body, but still kept in the cardboard box in which the specimen is kept. The specimen also shows some paint marks on the plastron, probably caused by former mounting on a freshly painted wooden pedestal.

Pictures.— Lidth de Jeude, 1893, pl. 9; Hoogmoed & Crumly, 1984: 256 (fig. 8).

Testudo indica Vosmaeri Suckow, 1798

Testudo indica. Vosmaeri - Schoepff, 1792: 103 and pl. 22 middle and lower figures; Schoepff, 1801: 120 and pl. 22 (middle and lower figure).
**Testudo indica Vosmaeri* Suckow, 1798: 57.
Testudo Vosmaeri; Fitzinger, 1826: 44; Günther, 1877: 53; Hubrecht, 1881: 41; Vaillant, 1893: 18.
Testudo indica; Temminck & Schlegel, 1834: 74.
Testudo vosmaeri; Lidth de Jeude, 1898: 4.
Geochelone vosmaeri; Hoogmoed & Crumly, 1984: 242; Hoogmoed, 1999: 57.
Cylindraspis vosmaeri; Gerlach, 2004: 103.

Holotype: RMNH.RENA 6001 (Cat. ost. a), 1 ♂, shell. Loc.: 'Africa, Promontorio bonae spei' [Cape of Good Hope, South Africa]. Ex.: Collection Prince d'Orange [= collection of Stadtholder].

Current name: *Cylindraspis vosmaeri* (Suckow, 1798).

Remarks.— Temminck & Schlegel (1834) indicated that the species did not occur in the Cape of Good Hope, and Günther (1877) specified that this specimen probably came from the island Rodriguez, which according to Fritz & Havaš (2007) constituted a type locality designation. The history of this specimen was discussed by Temminck & Schlegel (1834: 74-75), Hubrecht (1881) and Hoogmoed & Crumly (1984), who also provided measurements of the specimen. RMNH.RENA 6001 is a complete carapace and plastron joined, with the horny scutes still attached. The plastron is concave, so this was a male. Based on a remark by Temminck & Schlegel (1834: 75), Hoogmoed & Crumly (1984) noted that this specimen also would be a syntype of *Chersine retusa* Merrem, 1820, but reconsidering Merrem's (1820) text, we now are of the opinion that this was not the case and that Merrem's name seems just a replacement name for *Testudo indica* Schneider, 1783 (Fritz & Havaš, 2007). Vaillant (1893) also discussed this specimen and correctly noted 'Le plus intéressant comme étant le type de l'espèce est la carapace que décrivait Schoepff en 1792…' [= The most interesting for being the type of the species is the carapace which Schoepff described in 1792.]. Gerlach (2004: 103) apparently considers this a lectotype indication and mentions MNHNP 1883-558 as paralectotype. However, this is erroneous, as Schoepff (1792) and Suckow (1798) only based themselves on one specimen, viz. RMNH.RENA 6001, which by definition thus is the holotype. MNHNP 1883-558 at the time of describing *Testudo vosmaeri* was not taken into account and just is another specimen of this taxon, but not a type.

Note that the original description and figure by Schoepff (1792) mention the name '.Vosmaeri' preceded by a dot, which in this case means *Testudo indica* sensu Vosmaer. Thus, Schoepff (1792) did not propose the specific or subspecific name '*vosmaeri*' for this taxon, he was just relaying Vosmaer´s information on the specimen (Hoogmoed & Crumly 1984). The first one to officially coin the name *Testudo indica Vosmaeri* was Suckow (1798), who thus becomes the author of the taxon.

The species is considered extinct since about 1795 (Fritz & Havaš, 2007), apparently shortly after the RMNH specimen reached the Netherlands. However, Pritchard (1986) citing Bour mentions around 1804 as the date of disappearance of this species.

As indicated by the text on the label, this specimen originally formed part of the Cabinet of the Stadtholder, which was donated to the collection of Leiden University, which in 1820 formed one of the constituent parts of the collections of the Rijksmuseum van Natuurlijke Historie. It is not clear whether this specimen was stolen by the French in 1795 and transported to Paris and returned to the Netherlands in 1815 by the efforts of Prof. Dr. S.J. Brugmans (Holthuis, 1995), or whether it formed part of the collection of the Stadtholder that was overlooked by the French and stayed in Holland throughout the French occupation (Boeseman, 1970).

Pictures.— Schoepff, 1792: pl. 22 middle and lower figures; Schoepff, 1801: pl. 22 middle and lower figure; Hoogmoed & Crumly, 1984: 246 (fig. 2): Hoek Ostende et al., 1999: 57 (picture Purcell of carapace in right lateral view, and detail of last vertebral scale).

Trionychidae Fitzinger, 1826
Trionyx stellatus var. *japonicus* Temminck & Schlegel, 1834
(fig. 10)

**Trionyx stellatus* var. *japonicus* Temminck & Schlegel, 1834: 32; pl. 5 fig. 7; pl. 7, figs 1, 2; Schlegel, 1844: 108, pl. 31.

Syntypes: RMNH.RENA 3259, RMNH.RENA 3264, 2 ex. (alc.). 'Japon'. Leg.: Ph.F. von Siebold.

Current name: *Pelodiscus sinensis* (Wiegmann, 1834).

Remarks.— Several years of publication have been associated with the volume *Reptilia* of the Fauna Japonica. See the remarks section under *Emys vulgaris japonica* for our decision to accept 1834 as publication date for the chelonian part of the Fauna Japonica.

Temminck & Schlegel (1834: 34) stated to have received six specimens from Von Siebold, all of them preserved in alcohol ('les six sujets envoyés du Japon par Mr. Von Siebold et conservés à l'esprit de vin.') [= the six specimens sent from Japan by Mr. Von Siebold and preserved in alcohol.]. Only two syntypes have been located in the National Museum of Natural History in Leiden. Schlegel (1844: 109) states that since describing this taxon the Leiden museum had received a drawing and 'eine vollständige Reihe in Weingeist aufbewahrter Individuen' [= a complete series of specimens preserved in alcohol]. Based on these additional specimens he provides a detailed addition to the original description.

The drawing on pl. 31 (Schlegel, 1844) sent by Bürger apparently is of an adult

Fig. 10. *Pelodiscus sinensis* (species complex), RMNH.RENA 3264, alcohol preserved syntype of *Trionyx stellatus* var. *japonicus*. Note the wooden sticks used to keep the specimen in position, apparently commonly used in the early 19th century to pose specimens.

specimen in life [made in Japan by Kawahara Keiga], and as expected does not agree with any of the specimens in the RMNH collection.

We have provisionally identified this taxon as *P. sinensis*, being aware of the recent publication by Fritz et al. (2010) from which it seems to be clear that this is a species complex that in future may need further subdivision. The Japanese population does not seem to be natural but is derived from introduced specimens (Fritz et al., 2010) of which the provenance apparently is not (yet) known. For the time being it seems best to associate *Trionyx stellatus* var. *japonicus* with *P. sinensis* and hope that in the future a more precise synonymization will be possible.

Pictures.— Temminck & Schlegel, 1834: pl. 5 fig. 7; pl. 7, figs 1, 2; Schlegel, 1844: pl. 31.

TESTUDINES
PLEURODIRA

Chelidae Gray, 1831
Batrachemys heliostemma McCord, Joseph-Ouni & Lamar, 2001

**Batrachemys heliostemma* McCord, Joseph-Ouni & Lamar, 2001: 734, figs 1, 3-6, 8.
Mesoclemmys heliostemma Grünewald, 2009a: 16.

Paratypes: RMNH.RENA 31998-31999, 2 juvs. (alc.). Loc.: 'Callao, on the north bank of the Río Tapiche [5°21'S, 47°9'W] near the mouth of the Río Blanco, a tributary of the Río Ucayali, Loreto, Perú'. Leg.: F. Medem.

Current name: *Mesoclemmys heliostemma* (McCord, Joseph-Ouni & Lamar, 2001)

Pictures.— RMNH.RENA 31998 in McCord et al. 2001: 735, fig. 6D and E and in Grünewald 2009a: 17 (dorsal and ventral view), 18 (lateral view and detail head). RMNH.RENA 31999 in Grünewald 2009a: 19 (dorsal and ventral view), 20 (lateral view and detail head).

Chelodina mccordi Rhodin, 1994

Chelodina novae guinea; Kate, 1894: 688.
Chelodina novae-guineae; Lidth de Jeude, 1895: 120; Rooij, 1915: 315 (part), 350.
Chelodina novae guinea; Lidth de Jeude, 1898: 10.
**Chelodina mccordi* Rhodin, 1994: 4.

Paratype: RMNH.RENA 10187 (Cat. ost. *C. novaeguineae*), 1 skeleton, 19 cm. Loc.: 'Rotti' [= Roti Island, Indonesia]. Leg.: H.F.C. ten Kate.

Remarks.— Lidth de Jeude (1895: 120) considered three turtles collected by Dr. H. [F.C.] ten Kate on Roti as *Chelodina novae-guineae*. From his description it is clear that the museum received three specimens, two small ones and a larger one. The larger specimen mentioned is RMNH.RENA 10187 (a skeleton with the horny plates attached to the carapace and plastron), the two smaller ones, who were only considered as referred material in the description of *C. mccordi,* are RMNH.RENA 4349.

Dr. L.D. Brongersma, former herpetologist and director of the RMNH. in the 1950's already had recognized these three specimens as belonging to a new species, which he intended to describe as *C. rottiensis*, and the specimens were marked as such, even bearing labels of holotype and paratypes. However, this name was never published and is superseded by Rhodin's name. In the description Rhodin (1994) duly mentions the fact that Dr. L.D. Brongersma had recognized the RMNH specimens as a new species and had relinquished claims to the original description.

Rhodin (1994) described the species based on the holotype (MCZ 176730) and on three paratypes (MCZ 176731, 176732 and RMNH.RENA 10187). He also mentioned 14 referred specimens (one of the specimens in RMNH.RENA 4349, AGJR 365-7, 369, 448-9, 452-7, 460) [AGJR = Anders G.J. Rhodin private collection eventually to be deposited in MCZ]. It is not clear why the 14 referred specimens are not considered paratypes as well, because the author does not provide any reason why they should be considered as referred material only. On the contrary, all morphometric data of carapace and plastron are based on all specimens available. For skull morphometrics only the holotype and the three paratypes were used. It is interesting to note that only the RMNH specimens with certainty were obtained on Roti Island by Dr. H.F.C. ten Kate and that his itinerary (Kate, 1894) served to restrict the type locality to 'Danau Naloek, near Busalangga, ca. 11 km northeast of Tudameda and ca. 8 km southwest of Ba´a, elevation ca. 115 m, southwestern Roti Island (10°48´S, 123°00´E). East Nusa Tenggara Province, Indonesia' [Rhodin, 1994: 10]). It should be noted that this is a locality where Dr. ten Kate bought (not observed as stated by Rhodin, 1994) a small specimen of '*Chelodina novae guineae*' and his two small specimens now are preserved (in good condition) as RMNH. RENA 4349, which strangely enough was considered referred material only by Rhodin. All other material in MCZ and AJGR (including the holotype) was 'purchased from native villagers by Frank Yuwono in Kupang, western Timor, originally collected on Roti Island' (Rhodin, 1994) and thus at best is of questionable origin. The referred RMNH. RENA 4349 juvenile specimen has a carapace length of 99.5 mm, a midline plastron length of 76 mm and a total plastron length of 81 mm.

Pictures.— Rhodin (1994): fig. 4 skull of RMNH.RENA 10187 in dorsal, ventral and lateral view; fig. 5 plastron and carapace RMNH.RENA 10187.

Podocnemididae Cope, 1868
Emys Amazonica Spix, 1824
(fig. 11)

**Emys Amazonica* Spix, 1824: 1; pl. I; pl. II, figs 1-3; Franzen & Glaw, 2007: 207.
Emys expansa; Temminck & Schlegel, 1834: 48.
Podocnemis expansa; Hoogmoed & Gruber, 1983: 342.

Paralectotype: RMNH.RENA 3294, 1 juv. (alc.). Loc.: 'Macañon' [probably Marañon, see Hoogmoed & Gruber, 1983] [Brazil]. Leg.: J.B. von Spix.

Current name: *Podocnemis expansa* (Schweigger, 1812).

Remarks.— The lectotype of *Emys Amazonica* Spix was selected by Hoogmoed & Gruber (1983: 343). It is housed in the Zoologische Staatssammlung München (ZSM

2446/0/1), together with a number of paralectotypes (ZMSH 7/0-14/0, 2446/0/2-7, 2447/0/1-4, 2730/0 and 3095/0). The numbers in ZSM differ slightly from those provided by Hoogmoed & Gruber (1983) and now follow Franzen & Glaw (2007), who provided the actual numbering system of ZSM. The type locality given by Spix (1824: 2) is 'Habitat in fluvio Solimoens et confluentibus Javary, Rio Branco' [Habitat in Rio Solimões and at the confluence of Javary and Rio Branco], which actually is a composite of two localities which are separated by hundreds of kilometers: Rio Solimões, in Amazonas State and the confluence of the Javari and Rio Branco in northern Brazil, Roraima State.

Temminck & Schlegel (1834:48) refer to this species and say 'Le Musée des Pays-Bas doit à celui de Munich, les individus qu'il possède' [= The museum of Holland received from that in Munich the specimens it has]. From this text it can be concluded that the Leiden museum originally had more than one specimen of this species, but at the moment only RMNH.RENA 3294 is present and no other specimens that would qualify as Spix material.

Pictures.— none known.

Emys macrocephala Spix, 1824

**Emys macrocephala* Spix, 1824: 5; pl. IV; Franzen & Glaw, 2007: 207.
Emys dumeriliana; Temminck & Schlegel, 1834: 48.
Peltocephalus tracaxa; Hoogmoed & Gruber, 1983: 345.

Lectotype: RMNH.RENA 6164, 1 mounted ex. Loc.: 'Rio Solimoëns' [Brazil]. Leg.: J.B. von Spix.

Current name: *Peltocephalus dumerilianus* (Schweigger, 1812).

Remarks.— Temminck & Schlegel (1834: 48) briefly discuss the RMNH specimen and synonymise it with *Emys dumeriliana* Schweigger, 1812. Hoogmoed & Gruber (1983: 347) discussed the nomenclature of this species and selected the lectotype. Two paralectotypes (skulls) are in the Zoologische Staatssammlung München (ZSM 15/0, 17/0). The type locality given by Spix (1824: 5) is 'Airon ad ripam fluminis Yau, confluentis Rio

Fig. 11. *Podocnemis expansa*, RMNH.RENA 3294, alcohol preserved, recently hatched juvenile, syntype of *Emys amazonica*.

Negro' [Airon at the banks of the river Yau, at the confluence with the Rio Negro] (= Airon on the confluence of the Rio Jaú and Rio Negro, north of Manaus, Brazil). According to Hoogmoed & Gruber (1983: 347), the locality on the RMNH label is likely to be erroneous. Hoogmoed & Gruber (1983) already doubted whether the specimen depicted by Spix (1824) is the RMNH lectotype. They noted differences in the position of head and legs and in the borders of scales. RMNH.RENA 6164 has the head distinctly more extended than the animal depicted on pl. 4 (Spix, 1824) and we think the differences are such that the specimen depicted must have been another individual than RMNH.RENA 6164.

Pictures.— Spix, 1824, pl. 4 (another specimen than the RMNH lectotype).

CROCODYLIA

Crocodylidae Gray, 1825
Crocodilus biporcatus raninus Müller & Schlegel, 1841

Crocodilus biporcatus; Müller, 1838:75 (part).
**Crocodilus biporcatus raninus* Müller & Schlegel, 1839: pl. 3, figs 7, 8; Müller & Schlegel, 1841: 26.
Crocodilus porosus – Gray, 1844: 58 (part); Strauch, 1866 (part); Lidth de Jeude, 1898: 14 (part).
Crocodilus palustris; Strauch, 1866 (part).
Crocodylus raninus; Ross, 1990: 960; Ross, 1992: 401.

Lectotype: RMNH.RENA 3219, 1 juv. (alc.). Loc.: 'Pontianak, Borneo'. Leg.: P. Diard.
Paralectotypes: RMNH.RENA 7939 + RMNH.RENA 21695 1 juv., respectively dry skin and skull + lower jaw (of the same specimen). Loc.: 'op Java (…), omstreken van Tjikao' [near Kao Tji, Jawa Barat, Indonesia]. Leg.: [H.] Boie and [H. C.] Macklot; RMNH.RENA 37489 (formerly Cat. ost. n, 68 cm), 1 skull. Loc.: 'op Borneo (…) tot ver in de binnenland toe' [interior of Borneo]. Leg.: S. Müller, 1836; RMNH.RENA 37493 (formerly Cat. ost. p, 46 cm), 1 skull. Loc.: 'Tribuary of the Banjer River, Borneo'. Leg.: S. Müller, 1836.

Current name (according to Ross, 1990, 1992):

RMNH.RENA 3219 (lectotype) and RMNH.RENA 37493 (paralectotype) *Crocodylus raninus* Müller & Schlegel, 1841.

RMNH.RENA 37489 (paralectotype) *Crocodylus porosus* Schneider, 1801.

RMNH.RENA 7939 + 21695 (paralectotype) and 1 juv. SMF 8090 (paralectotype) *Crocodylus siamensis* Schneider, 1801.

Remarks.— Ross (1992) recognized three different species in the type series. RMNH.RENA 3219 and RMNH.RENA 37493 (Cat. ost. p) are the only specimens that belong to *Crocodylus raninus.* RMNH.RENA 37489 (Cat. ost. n) is a skull of *C. porosus* Schneider, 1801 and RMNH.RENA 21695 (+ RMNH.RENA 7939), as well as a syntype now in the Forschungsinstitut und Natur-Museum Senckenberg in Frankfurt (SMF 8090, juvenile, ex RMNH) belong to *C. siamensis* Schneider, 1801. Ross (1990: 960) revived *Crocodylus raninus* Müller & Schlegel, 1844 as a distinct species. In a following publication, he selected RMNH.RENA 3219 as lectotype, and RMNH.RENA 37493, RMNH.RENA 37489 (Cat. Ost. n), RMNH.RENA 21695, RMNH.RENA 7939 and SMF 8090 as paralectotypes (Ross, 1992: 401).

After the publication of both articles by Ross, the specimens referred to as RMNH

'n' and RMNH 'p' have been renumbered (now RMNH.RENA 37489 and RMNH.RENA 37493).

Ross (1992) provided new measurement for the skulls RMNH.RENA 37489 (64.5 cm) and RMNH.RENA 37493 (45 cm), which differ slightly from the sizes mentioned by Lidth de Jeude (1898). Lidth de Jeude (1898) under *Crocodilus porosus*, indicated both skulls Cat. Ost. n (= RMNH.RENA 37489) and Cat. Ost. p (= RMNH.RENA 37493) as: ' race à museau obtus' [= race with the blunt snout] and gave lengths of respectively 68 cm and 46 cm.

RMNH.RENA 7939 (skin) and 21695 (skull + lower jaw) belong to the same juvenile specimen of *Crocodylus siamensis*, that apparently originally was mounted on a wooden pedestal (still present) until at least 1898, because the skull RMNH.RENA 21695 is not mentioned by Lidth de Jeude (1898) in the Catalogue Ostéologique. Apparently at a later date the skull and the stuffing were removed from the skin and skin and skull ended up with different registration numbers. It is not clear what happened to the rest of the skeleton, but no matching skeleton could be found in the RMNH collections. The dried skin of the specimen referred to as RMNH.RENA 21695 by Ross (1990, 1992) actually is numbered as RMNH.RENA 7939, while the skull of the same specimen remains RMNH.RENA 21695.

Temminck's 'Verhandelingen over de natuurlijke geschiedenis der Nederlandsche Overzeesche bezittingen, 1839-1844. Zoologie', as mentioned above, was published in parts over a period of 6 years. Husson & Holthuis (1955) provide details on the publication dates of the parts containing reptiles. We here are concerned only with pages 1-28 which deal with crocodilians. Pages 1-8 and plates 1-3 were published on December 18, 1839, pages 9-28 on October 11, 1841. We have used these dates, instead of the generalised date 1844 found in the literature.

Pictures.— Müller & Schlegel, 1839: pl. 3, figs 7, 8.

† *Crocodilus ossifragus* Dubois, 1908

**Crocodilus ossifragus* Dubois, 1908: 1269; Massimo & Vos, 2010.

Syntypes: (all material Java, Indonesia) RMNH.Dub 10, 5 teeth, Trinil; RMNH.Dub 11, skull, Trinil; RMNH.Dub 15, mandible, Trinil; RMNH.Dub 16, dentary, Trinil; RMNH.Dub 17, mandible, Trinil; RMNH.Dub 18, dentary, Trinil; RMNH.Dub 19, mandible, Trinil; RMNH.Dub 27, dentary, Trinil; RMNH.Dub 28, maxilla, Trinil; RMNH.Dub 53, angular, Trinil; RMNH.Dub 74, premaxilla, Trinil; RMNH.Dub 1477, 33 teeth, Trinil; RMNH.Dub 2005, tooth, Trinil; RMNH.Dub 2184, 57 teeth Trinil, RMNH.Dub 2707, 22 teeth, Trinil; RMNH.Dub 10111a, dentary, Trinil; RMNH.Dub 10544, mandible, Trinil; RMNH.Dub 1617b, pterygoid and ectopterygoid, Trinil; RMNH.Dub 45, skull, Bogo; RMNH.Dub 47, skull, Bogo; RMNH.Dub 50, premaxilla, Bogo; RMNH.Dub 6975, tooth, Jeruk; RMNH.Dub 33, 3 teeth, Kali Gedeh; RMNH.Dub 88, 2 teeth, Kali Gedeh; RMNH.Dub 12, skull, Kedung Brubus; RMNH. Dub 21, angular, Kedung Brubus; RMNH.Dub 46, maxilla, Kedung Brubus; RMNH.Dub 48, maxilla, Kedung Brubus; RMNH.Dub 2716, 10 teeth, Kedung Brubus; RMNH.Dub 9940a, osteoderm, Kedung Brubus; RMNH.Dub 42, maxilla, Kebon Duren; RMNH.Dub 42, maxilla, Kebon Duren; RMNH.Dub 12942, tooth, Kebon Duren; RMNH.Dub 29, premaxilla, Padas Malang; RMNH.Dub 13, skull, Teguan; RMNH.Dub 24, skull and mandible, Teguan; RMNH.Dub 37a, 6 dentaries, Teguan; RMNH.Dub 2706, skull, Teguan; RMNH.Dub 20, skull, Java; RMNH.Dub 36, tooth, Java; RMNH.Dub 43, maxilla, Java; RMNH.Dub 44, skull, Java; RMNH.Dub 51, skull, Java; RMNH.Dub 55, angular, Java; RMNH.Dub 2710, 4 teeth, Java; RMNH.Dub 8132, mandible, Java; RMNH.Dub 9945c, osteoderm, Java; RMNH.Dub 10318a, osteoderm, Java; RMNH.Dub 10341c, 3 osteoderms; RMNH.Dub 12945, skull, Java; RMNH.Dub

12946, skull, Java; RMNH.Dub 12948, jugal, Java; RMNH.Dub 12950, angular, Java; RMNH.Dub 12951, dentary, Java; RMNH.Dub 12952, premaxilla, Java; RMNH.Dub 1614, dentary, Java. All localities are of late Early Pleistocene or Middle Pleistocene age.

Current name: *Crocodylus siamensis* Schneider, 1801.

Remarks.— Dubois (1908) only gave a short diagnosis of this species. Janensch (1911) provided an extensive description of material of this species obtained by the German Trinil expedition. Müller (1923) synonymised *Crocodylus ossifragus* with the extant *Crocodylus siamensis* Schneider, 1801. A full description of the material in the Dubois collection is given by Massimo & de Vos (2010).

Pictures.— Massimo & Vos (2010): figs 6-9, 17S-29S.

Crocodilus (*Gavialis*) *Schlegelii* Müller, 1838
(figs 12, 13)

**Crocodilus* (*Gavialis*) *Schlegelii* Müller, 1838: 77, pl. 3; Müller & Schlegel, 1839: pls. 1-3; Müller & Schlegel, 1841: 18.

Tomistoma schlegelii; Lidth de Jeude, 1898: 13; King & Burke, 1989: 15.

Syntypes: RMNH.RENA 3198, 1 egg in alcohol, 'Borneo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia], leg. S. Müller, 1837; RMNH.RENA 3200, 1 embryo (alc.). Loc.: 'Borneo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller; RMNH.RENA 7934-5, 2 mounted ex. Loc.: 'Borneo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller; RMNH.RENA 35444 (Cat. ost. b, 76 cm), 1 skull. Loc.: 'Borneo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller, 1836; RMNH.RENA 35445 (Cat. ost. c, 70 cm), 1 skull. Loc.: 'Dans d'un lac d'eau douce à l'intérieur de Bornéo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller, 1836; RMNH.RENA 35449, 1 dried egg. Loc.: none given [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller; RMNH.RENA 39581 (Cat. ost. a, skull 63.5 cm, total 360

Fig. 12. *Tomistoma schlegelii*, RMNH.RENA 3200, alcohol preserved embryo, syntype of *Crocodilus (Gavialus) schlegelii*.

cm), 1 skeleton. Loc.: 'Borneo' [probably Lake Lamoeda, 8 days upstream river Doeson, Borneo, Indonesia]. Leg.: S. Müller.

Current name: *Tomistoma schlegelii* (Müller, 1838).

Remarks.— The type locality according to Müller (1838: 85) is 'binnenlanden van Borneo' [interior of Borneo]. Müller obtained eggs with embryos from a nest discovered by P.W. Korthals (also a member of the Dutch Natuurkundige Commissie) in September 1836, by Lake Lamoeda (Müller, 1838: 36). Of these eggs apparently only two survived till today: RMNH.RENA 3198 (alc.) and RMNH.RENA 35449 (dry). RMNH.RENA 35449 now is damaged (broken and partly repaired in April 2003). This egg was only found recently in the RMNH collection without any data, but it did agree completely in size and shape with the egg depicted by Müller & Schlegel (1841) and is assumed to be one of the eggs mentioned in the original description by Müller (1838) and in Müller & Schlegel (1841).

King & Burke (1989: 15) only mention RMNH.RENA 3200, 7934, 7935 and the skeletal material Cat. ost. a, b and c as syntypes.

Pictures.— Müller, 1838: 77, pl. 3; Müller & Schlegel, 1839: pls. 1-3.

Gavialidae Adams, 1854
† *Garialis bengawanicus* Dubois, 1908

**Garialis* [= *Gavialis*] *bengawanicus* Dubois, 1908: 1269.

Syntypes: (all material Java, Indonesia) RMNH.Dub 1, 2 skulls, Trinil; RMNH.Dub 2, dentary, Trinil; RMNH.Dub 5, rostrum, Trinil; RMNH.Dub 7, mandible, Trinil; RMNH.Dub 8, dentary, Trinil; RMNH.Dub 9 + 1617a, skull, Trinil; RMNH.Dub 10, 86 teeth, Trinil; RMNH.Dub 34b, 33 teeth, Trinil; RMNH.Dub 246, 3 jugals and 2 skull fragments; RMNH.Dub 1473c, 162 teeth, Trinil; RMNH.Dub 1477, 2 teeth; RMNH.Dub 1615, 190 teeth, Trinil; RMNH.Dub 1616, skull table and 10 teeth; Trinil; RMNH.Dub 1618,

Fig. 13. *Tomistoma schlegelii*, RMNH.RENA 3198, alcohol preserved egg, syntype of *Crocodilus (Gavialus) schlegelii*.

supraoccipital, Trinil; RMNH.Dub 1620, dentary; Trinil; RMNH.Dub 1621a, dentary, Trinil; RMNH.Dub 1623, skull, Trinil; RMNH.Dub 2655, 68 teeth, Trinil; RMNH.Dub 6401, axis, Trinil; RMNH.Dub 33, tooth, Kali Gedeh; RMNH.Dub 37b, mandible, Kedung Brubus; RMNH.Dub 2716, tooth, Kedung Brubus; RMNH.Dub 6 + 25, mandible, Kedung Lumbu; RMNH.Dub 23, 2 splenials, Ngandjar; RMNH.Dub 4 + 32 + 2715, mandible, Pitu; RMNH.Dub 37a, dentary, Teguan; RMNH.Dub 1461a, 8 teeth, Teguan or Bogo; RMNH.Dub 1614, mandible, Java; RMNH.Dub 1621b, skull fragment, Java; RMNH.Dub 12947, skull fragment, Java; RMNH.Dub 15583, osteoderm, Java, RMNH.Dub 15584, 3 osteoderms, Java. All localities are of late Early Pleistocene or Middle Pleistocene age.

Current name: † *Gavialis bengawanicus* Dubois, 1908.

Remarks.— Dubois (1908) clearly wrote *Garialis* with a 'r' instead of a 'v'. This is clear from comparison with other italicized names with a 'r' or a 'v'. However, Dubois (1908) compared his *Garialis bengawanicus* with '*G. gangeticus*', a species for which only the generic name *Gavialis* ever has been used. We therefore infer that the use of the 'r' instead of a 'v' was inadvertent, and due to misinterpretation of a handwritten manuscript by the printer. Therefore there are no nomenclatural consequences.

Dubois (1908) only gave a short diagnosis of this species. Janensch (1911) provided an extensive description of the material of this species obtained by the German Trinil expedition. A full description of the material in the Dubois collection is given by Massimo & de Vos (2010).

Pictures.— Massimo & De Vos (2010): figs 1-5, 2S-15S.

Specimens in the RMNH collections indicated as types, which are not types, or types of other names

'*Chelodina rottiensis* nov. sp.'

RMNH.RENA 10187, RMNH.RENA 4349 from Rotti, Indonesia, collected by H.C.F. ten Kate. As mentioned under *Chelodina mccordi* this is a label name coined by L.D. Brongersma that was never published. However, RMNH.RENA 10187 is a paratype of *Chelodina mccordi* Rhodin.

'*Cistudo gastrotaenia* Bleeker'

RMNH.RENA 4063 (alc.) contains two hatchlings of *Cuora amboinensis* (Daudin, 1801) and on the label has the handwritten indication '*Cistudo gastrotaenia*, type, Dr. Bleeker, Arch. Ind.' We have not been able to find any published record of this name, and have to assume that it is a manuscript or label name of Dr. P. Bleeker that was never published and nomenclatorially does not exist.

Clemmys Sigriz Michahelles, 1829

RMNH 3327 erroneously has been indicated as type of this name. For further comments see under *Emys vulgaris* Gray, 1831.

Emydura Adolf Friedr[*ich*] spec. nov. Kopstein

RMNH.RENA 20700, *Chelodina* cf. *branderhorsti* (Ouwens, 1914) from the Jakati River, Bintoemi Bay, SW Dutch New Guinea, October 3, 1923 collected by Dr. F. Kopstein, bears a partly legible label showing this name. We have not been able to locate this name in literature and assume this is a label and/or manuscript name coined by F. Kopstein after his collecting trip to the Jakati River.

Notochelys platynota (Gray, 1834)

RMNH.RENA 3348 on a rather recently handwritten label is incorrectly is indicated as the holotype of this species, but this specimen is a syntype of *Cyclemys giebelii* only (see above). This, however, is due to an administrative mistake of a technician writing a wrong text (Fig. 1). This misunderstanding has never entered the literature.

Conclusions and summary

We could locate 31 primary types, *viz*. five holotypes, five lectotypes and 21 syntypes of ten names (not counting all the fossilized segments of two crocodilian taxa), belonging to in total 19 species.

Holotypes: 5 (*Chelonura Temminckii*, RMNH.RENA 6166; †*Hardella isoclina* RMNH Dub. 2722; *Testudo Forstenii* RMNH.RENA 3811; *Testudo Strauchi* RMNH.RENA 6011; *Testudo indica Vosmaeri* RMNH.RENA 6001)

Lectotypes: 5 (*Emys subtrijuga* RMNH.RENA 6082; *Testudo dussumieri* RMNH.RENA 3231; *Testudo emys* RMNH.RENA 3808; *Emys macrocephala* RMNH.RENA 6164; *Crocodylus biporcatus raninus* RMNH.RENA 3219).

Syntypes: 21 (*Cyclemys giebelii* RMNH.RENA 3348; *Emys borneoensis* RMNH.RENA 3296, 6210; *Emys vulgaris japonica* RMNH.RENA 3331, 3332, 3333 (2 ex.), 3334, 6142; *Emys vulgaris picta* RMNH.RENA 3330 (2 ex.); *Trionys stellatus* var. *japonicus* RMNH. RENA 3259, 3264; †*Crocodilus ossifragus* RMNH Dub. a large collection of fossilized remains, no complete specimen; *Tomistoma Schlegelii* RMNH.RENA 3198, 3200, 7934, 7935, 35444, 35445, 35449, 39581; †*Garialis bengawanicus* RMNH Dub. a large collection of fossilized remains, no complete specimen, but one incomplete skull.

The following 26 secondary types were located, *viz.,* 12 paratypes of six names and 14 paralectotypes of six names.

Paratypes: 12 (*Emys orbicularis occidentalis* RMNH.RENA 11371 (2 ex.), 15003; *Cyclemys enigmatica* RMNH.RENA 3838, 6066, 6068, 27828; *Cyclemys pulchristriata* RMNH. RENA 4751; *Geoemyda spengleri sinensis* RMNH.RENA 5887; *Batrachemys heliostemma* RMNH.RENA 31998, 31999; *Chelodina mccordi* RMNH.RENA 10187).

Paralectotypes: 14 (*Emys dentata* RMNH.RENA 6062, 6063, 6067, 40474; **Emys subtrijuga* RMNH.RENA 6084, 6085; *Emys vulgaris* RMNH.RENA 3327: **Testudo emys* RMNH. RENA 6005, 6030, 17967; *Emys Amazonica* RMNH.RENA 3294; **Crocodylus biporcatus raninus* RMNH.RENA 7939+21695 (skin and skull + lower jaw of same specimen), 37489, 37493). Of names indicated with * the lectotype also is present in the RMNH collection.

A total of 31 primary and 26 secondary type specimens was located for 30 nominal names, of which 17 (15 recent and two fossil taxa) still are recognised as full species today. We think that this inventory is complete and that among the RMNH material there are no more types hiding.

The type localities of the RMNH type material are spread over the world: Europe (1 specimen, 1 taxon), N. America (1 specimen, 1 taxon), S. America (4 specimens, 3 taxa), Africa (4 specimens, 2 taxa), Aldabra (1 specimen, 1 taxon), Mascarenes (1 specimen, 1 taxon), mainland SE Asia (2 specimens, 2 taxa), Indonesia (33 specimens of 13 nominal taxa, not counting the material of 2 extinct crocodilians), Japan (10 specimens, 3 taxa), although there is a clear majority, both in number of specimens and number of taxa from Indonesia. The fact that the RMNH collections contain the type series of two recent crocodilian taxa (8.3% of existing recent taxa) is noteworthy.

Acknowledgements

A first skeleton draft of this type list was prepared by Dr. L.W. van den Hoek Ostende (RMNH) under the supervision of Dr. M.S. Hoogmoed in the period 1995/96, during work on the Delta Plan for the Preservation of Cultural Heritage, a project financed by the then Ministerie van Welzijn, Volksgezondheid en Cultuur (= Ministry of Welfare, Public Health and Culture). This project provided Dutch National Museums, among which the RMNH, 'with extra funding above their normal operating budgets to reduce arrears in conservation and registration. It provided a unique possibility to register type-material and thus fulfil recommendation 72G (4) of the International Code of Zoological Nomenclature, viz., that 'every institution in which name-bearing types are deposited should publish lists of name-bearing types in its possession or custody'. The registration of types and specimens of extinct or endangered species in the vertebrate collections [was] one of the many projects in the National Museum of Natural History financed by the 'Delta Plan''(Hoek Ostende et al., 1997). Prof. Dr. U. Fritz provided useful suggestions about the status of old material of some European and Southeast Asian species of *Mauremys* and *Cyclemys*. R. de Ruiter, collection manager of the herpetological collection of the National Museum of Natural History, Leiden, The Netherlands, provided information about recent herpetological material in the RMNH collection.

We want to thank Dr. J. de Vos and R. van Zelst of the department of Geology of the National Museum of Natural History for the help and the information they provided about the fossil Dubois type material in the RMNH collection.

The present work has been partly financed by a grant from the SenterNovem Type Project (project no. 1280).

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Received: 11.xi.2009
Accepted: 31.v.2010
Edited: L.P. van Ofwegen

Alphabetical list of the current names for the type specimens in the RMNH, with their original names (if different) between brackets

Batagur borneoensis (Schlegel & Müller, 1845) [*Emys borneoensis* Schlegel & Müller, 1845]

Batrachemys heliostemma McCord, Joseph-Oudi & Lamar, 2001

Chelodina mccordi Rhodin, 1994

Crocodylus porosus Schneider, 1801 [*Crocodilus biporcatus raninus* Müller & Schlegel, 1841 part]

Crocodylus raninus Müller & Schlegel, 1841 [*Crocodilus biporcatus raninus* Müller & Schlegel, 1841 part]

Crocodylus siamensis Schneider, 1801 [*Crocodilus biporcatus raninus* Müller & Schlegel, 1841 part; †*Crocodylus ossifragus* Dubois, 1908]

Cyclemys dentata (Gray, 1831) [*Emys dentata* Gray, 1831 part]

Cyclemys enigmatica Fritz, Guicking, Auer, Sommer, Wink & Hundsdörfer, 2008 [*Emys dentata* Gray, 1831 part]

Cyclemys pulchristriata Fritz, Gaulke & Lehr, 1997

Cylindraspis vosmaeri (Suchow, 1798) [*Testudo indica Vosmaeri* Suchov, 1798]

Dipsochelys dussumieri (Gray, 1831) [*Testudo dussumieri* Gray, 1831]

Emys orbicularis occidentalis Fritz, 1993

†*Gavialis bengawanicus* Dubois, 1908 [†*Garialis bengawanicus* Dubois, 1908]

Geoemyda spengleri (Gmelin, 1789) [*Geoemyda spengleri sinensis* Fan, 1931]

Indotestudo forstenii (Schlegel & Müller, 1845) [*Testudo Forstenii* Schlegel & Müller, 1845]

Macrochelys temminckii (Troost in Harlan, 1835) [*Chelonura Temminckii* Troost in Harlan, 1835

Malayemys subtrijuga (Schlegel & Muller, 1845 [*Emys subtrijuga* Schlegel & Müller, 1845]

Manouria emys emys (Schlegel & Müller, 1840) [*Testudo emys* Schlegel & Müller, 1840]

†*Mauremys? isoclina* (Dubois, 1908) [†*Hardella isoclina* Dubois, 1908]

Mauremys japonica (Temminck & Schlegel, 1834) [*Emys vulgaris japonica* Temminck & Schlegel, 1834]

Mauremys reevesii (Gray, 1831) [*Emys vulgaris picta* Schlegel, 1844]

Mauremys rivulata (Valenciennes, 1833) [*Emys vulgaris* Gray, 1831]

Pelodiscus sinensis (Wiegmann, 1834) [*Trionyx stellatus* var. *Japonicus* Temminck & Schlegel, 1834]. Note that only recently it has been realized that *P. sinensis* is a species complex, and thus the identification is provisional, pending further study (Fritz et al., 2010).

Peltocephalus dumerilianus (Schweigger, 1812) [*Emys macrocephala* Spix, 1824]

Podocnemis expansa (Schweigger, 1812) [*Emys Amazonica* Spix, 1824]

Psammobates geometricus (Linnaeus, 1758) [*Testudo Strauchii* Lidth de Jeude, 1893]

Tomistoma schlegelii (Müller, 1838) [*Crocodilus (Gavialis) Schlegelii* Müller, 1838]

Alphabetical list of original names of RMNH types with their current identification in bold

Batrachemys heliostemma McCord, Joseph-Ouni & Lamar, 2001 = *Mesoclemmys heliostemma* (McCord, Joseph-Ouni & Lamar, 2001)

Chelodina mccordi Rhodin, 1994

Chelonura Temminckii Troost in Harlan, 1835 = *Macrochelys temminckii* (Troost in Harlan, 1835)

Crocodilus biporcatus raninus Müller & Schlegel, 1841 = *Crocodylus porosus* Schneider, 1801 (part), *Crocodylus raninus* Müller & Schlegel, 1841 (part), *Crocodylus siamensis* Schneider, 1801 (part)

†*Crocodilus ossifragus* Dubois, 1908 = *Crocodylus siamensis* Schneider, 1801

Crocodilus (Gavialis) Schlegelii Müller, 1838 = *Tomistoma schlegelii* (Müller, 1838)

Cyclemys enigmatica Fritz, Guicking, Auer, Sommer, Wink & Hundsdörfer, 2008

Cyclemys giebelii Hubrecht, 1881 = *Notochelys platynota* (Gray, 1834)

Cyclemys pulchristriata Fritz, Gaulke & Lehr, 1997

Emys Amazonica Spix, 1824 = *Podocnemis expansa* (Schweigger, 1812)

Emys borneoensis Schlegel & Müller, 1841 = *Batagur borneoensis* (Schlegel & Müller, 1841)

Emys dentata Gray, 1831 (part) = *Cyclemys dentata* (Gray, 1831 (part), *Cyclemys enigmatica* Fritz, Guicking, Auer, Sommer, Wink & Hundsdörfer, 2008 (part)

Emys macrocephala Spix, 1624 = *Peltocephalus dumerilianus* (Schweigger, 1812)

Emys orbicularis occidentalis Fritz, 1993

Emys subtrijuga Schlegel & Müller, 1845 = *Malayemys subtrijuga* (Schlegel & Müller, 1845)]

Emys vulgaris Gray, 1831 = *Mauremys rivulata* (Valenciennes, 1833)

Emys vulgaris japonica Temminck & Schlegel, 1834 = *Mauremys japonica* (Temminck & Schlegel, 1834)

Emys vulgaris picta Schlegel, 1844 = *Mauremys reevesii* (Gray, 1831)

†*Garialis bengawanicus* Dubois, 1908 = †*Gavialis bengawanicus* Dubois, 1908

Geoemyda spengleri sinensis Fan, 1931 = *Geoemyda spengleri* (Gmelin, 1789)

†*Hardella isoclina* Dubois, 1908 = †*Mauremys? isoclina* (Dubois, 1908)

Testudo dussumieri Gray, 1831 = *Dipsochelys dussumieri* (Gray, 1831)

Testudo emys Schlegel & Müller, 1840 = *Manouria emys emys* (Schlegel & Müller, 1840)

Testudo Forstenii Schlegel & Müller, 1845 = *Indotestudo forstenii* (Schlegel & Müller, 1845)

Testudo Strauchii Lidth de Jeude, 1893 = *Psammobates geometricus* (Linnaeus, 1758)

Testudo indica Vosmaeri Suckow, 1798 = *Cylindraspis vosmaeri* (Suckow, 1798)

Trionyx stellatus var. *japonicus* Temminck & Schlegel, 1834 = *Pelodiscus sinensis* (Wiegmann, 1834. Note that only recently it has been realized that *P. sinensis* is a species complex, and thus the identification is provisional, pending further study (Fritz et al., 2010).

Table 1. Summary of nominal and present names, type status and number of type specimens of Testudines and

Original name	Author	Year	Present name	Holotype
TESTUDINES				
Chelydridae				
Chelonura Temminckii	Troost in Harlan	1835	*Macrochelys temminckii*	RMNH.RENA 6166
Emys orbicularis occidentalis	Fritz	1993	*Emys orbicularis occidentalis*	
Geoemydidae				
Cyclemys enigmatica	Fritz et al.	2008	*Cyclemys enigmatica*	
Cyclemys giebelii	Hubrecht	1881	*Notochelys platynota*	
Cyclemys pulchristriata	Fritz et al.	1997	*Cyclemys pulchristriata*	
Emys borneoensis	Schlegel & Müller	1845	*Batagur borneoensis*	
Emys dentata	Gray	1831	*Cyclemys dentata*	
Emys dentata	Gray	1831	*Cyclemys enigmatica*	
Emys subtrijuga	Schlegel & Müller	1845	*Malayemys subtrijuga*	
Emys vulgaris	Gray	1831	*Mauremys rivulata*	
Emys vulgaris japonica	Temminck & Schlegel	1834	*Mauremys japonica*	
Emys vulgaris picta	Schlegel	1844	*Mauremys reevesii*	
Geoemyda spengleri sinensis	Fan	1931	*Geoemyda spengleri*	
† *Hardella isoclina*	Dubois	1908	† *Mauremys*? *isoclina*	RMNH Dub. 2722
Testudinidae				
Testudo dussumieri	Gray	1831	*Dipsochelys dussumieri*	
Testudo emys	Schlegel & Müller	1840	*Manouria emys emys*	
Testudo Forstenii	Schlegel & Müller	1845	*Indotestudo forstenii*	RMNH.RENA 3811
Testudo Strauchi	Lidth de Jeude	1893	*Psammobates geometricus*	RMNH.RENA 6011
Testudo Vosmaeri	Suckow	1798	*Cylindraspis vosmaeri*	RMNH.RENA 6001
Trionychidae				
Trionyx stellatus var. *japonicus*	Temminck & Schlegel	1834	*Pelodiscus sinensis* (species complex)	
Chelidae				
Batrachemys heliostemma	McCord et al.	2001	*Mesoclemmys heliostemma*	
Chelodina mccordi	Rhodin	1994	*Chelodina mccordi*	MCZ 176730
Podocnemididae				
Emys Amazonica	Spix	1824	*Podocnemis expansa*	
Emys macrocephala	Spix	1824	*Peltocephalus dumerilianus*	
CROCODYLIA				
Crocodylidae				
Crocodilus biporcatus raninus	Müller & Schlegel	1841	*Crocodylus raninus*	
Crocodilus biporcatus raninus	Müller & Schlegel	1841	*Crocodylus porosus*	
Crocodilus biporcatus raninus	Müller & Schlegel	1841	*Crocodylus siamensis*	
† *Crocodilus ossifragus*	Dubois	1908	*Crocodylus siamensis*	
Crocodilus (Gavialis) Schlegelii	Müller	1838	*Tomistoma schlegelii*	
Gavialidae				
† *Garialus bengawanicus*	Dubois	1908	† *Gavialus bengawanicus*	

Crocodylia in the RMNH collections.

Lectotype	Syntypes	Para(lecto)types	Number in RMNH.RENA
			1
		RMNH.RENA 11371, 15003	3
		RMNH.RENA 3838, 6066, 6068, 27828	4
	RMNH.RENA 3348		1
		RMNH.RENA 4751	1
	RMNH.RENA 3296, 6210		2
		RMNH.RENA 6063, 6067, 40474	3
		RMNH.RENA 6062	1
RMNH.RENA 6082		RMNH.RENA 6084, 6085	3
		RMNH.RENA 3327	1
	RMNH.RENA 3331-3334, 6142		6
	RMNH.RENA 3330 A-B, MNHNP 1954		2
		RMNH.RENA 5889	1
			1
RMNH.RENA 3231			1
RMNH.RENA 3808		RMNH.RENA 6005, 6030, 17967: MNHNP 9422	4
			1
			1
			1
	RMNH.RENA 3259, 3264		2
		RMNH.RENA 31998-99	2
		RMNH.RENA 10187; MCZ 17631-2	1
ZSM 2246/0/1		RMNH.RENA 3294; ZSM 7/0-14/0, 2446/0/2-7, 2447/0/1-4, 2730/0, 3095/0	1
RMNH.RENA 6164			1
RMNH.RENA 3219		RMNH.RENA 37493	2
		RMNH.RENA 37489	1
		RMNH.RENA 7939 + 21695; SMF 8090	1
	RMNH Dub. Skull and many fragments		many
	RMNH.RENA 3198, 3200, 7934-5, 35444-5, 35449, 39581		8
	RMNH Dub. many fragments		many